Climate Change Will Impact the Seattle Department of Transportation

An Audit on the Impacts of Global Warming on the City of Seattle's Department of Transportation

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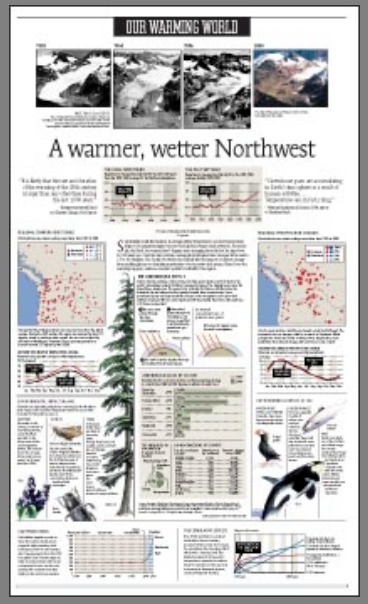
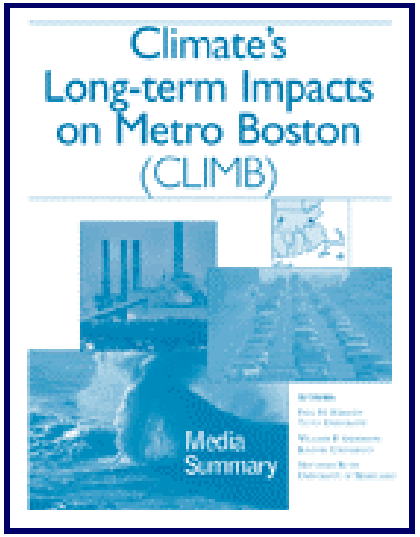
Climate Change Study: How it Began…

seattlepi.com

Seattle Post-Intelligencer



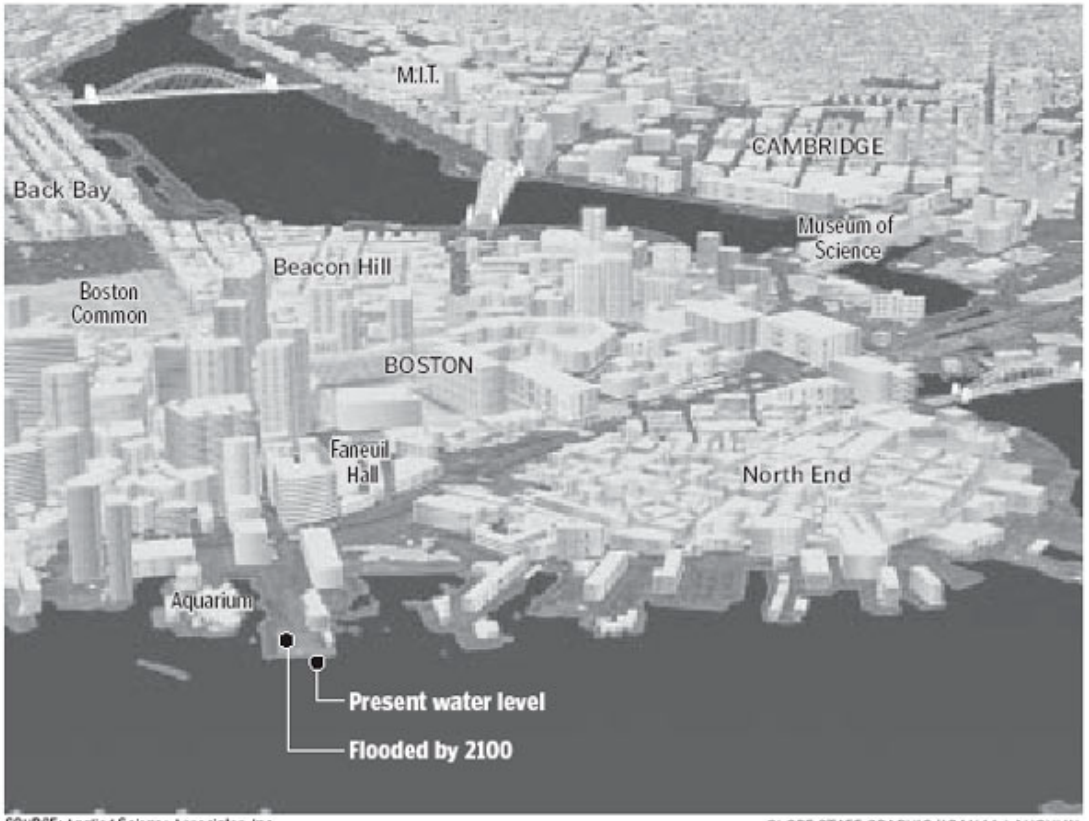
- **Addressing global warming will cost a lot.**
- **Not addressing global warming will cost even more!**



Global warming impact on Boston

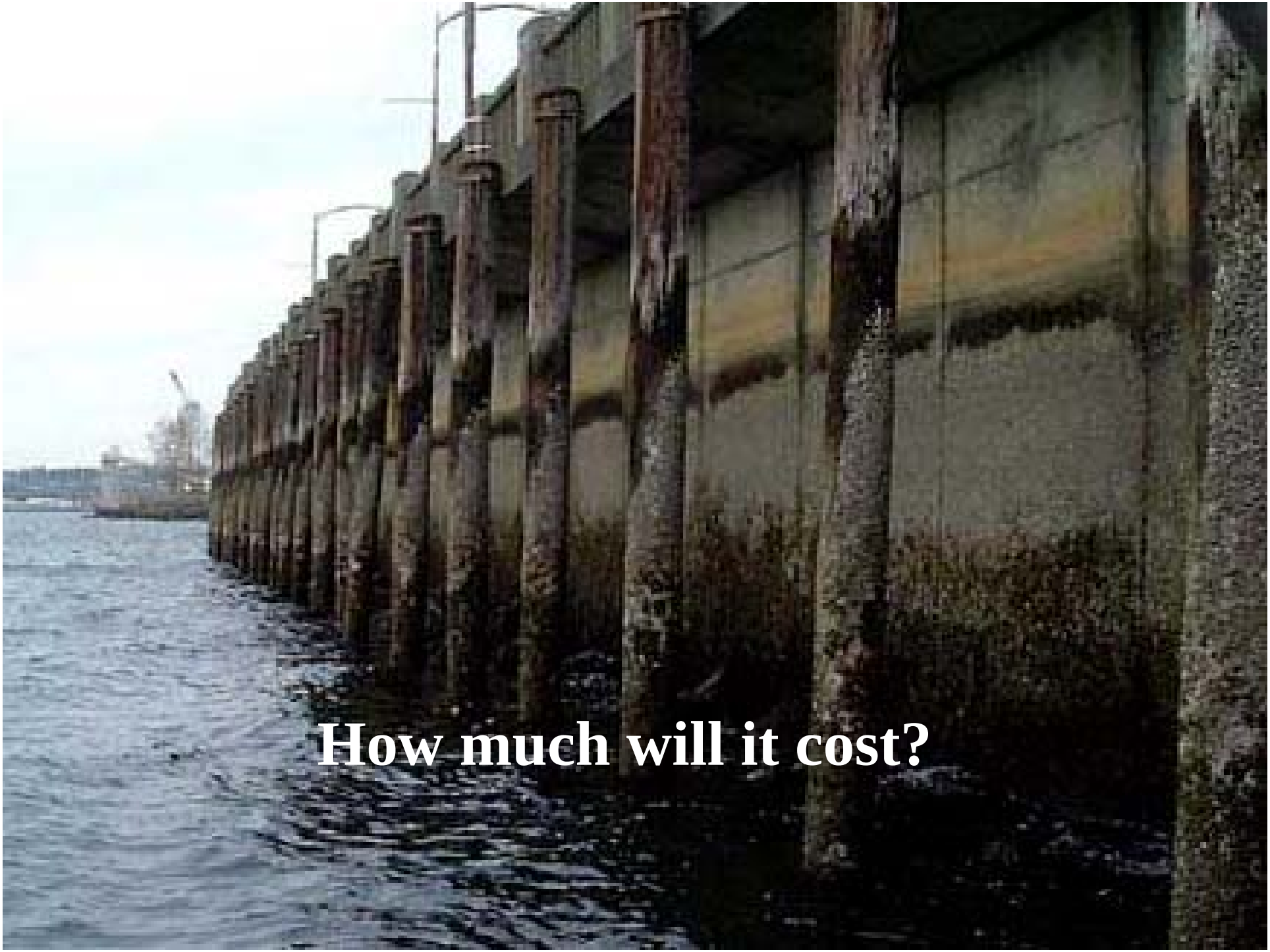
This rendering depicts coastal flooding by the end of the century resulting from the combined effects of a sea level rise and a storm surge. Data from the EPA study assumes a 2- to 3-foot rise in the sea level combined with the coastal surge from a storm. The flooding plotted along the Charles River occurs because the surge pushes seawater over the dam.

Existing water levels Coastal flooding likely by 2100



SOURCE: Applied Science Associates, Inc

GLOBE STAFF GRAPHIC/JOAN McLAUGHLIN


How much will it cost?

Being able to anticipate today what the climate induced impacts may be on existing and future infrastructure is vital for planning and investment decisions.

Getting policy-makers to focus on long-range planning, however, presents a challenge.

Most infrastructures have a lifetime of many decades–parts of the Boston subway and sewer system are more than 100 years old.

--CLIMB Report

Infrastructures are designed according to the prevailing socioeconomic and environmental conditions at the time of planning and construction, and thus are very sensitive to climate.

Sustained changes in climate and weather may affect the ability of existing infrastructure to provide reliable services and may require costly adjustments or repairs to remain viable.

The CLIMB study tests overall monetary and environmental costs for three adaptive strategies:

- **“Ride-It-Out”**
- **“Build-Your-Way-Out”**
- **The “Green” scenario**

CLIMB presents key findings in seven areas of public welfare and infrastructure:

- **sea level rise,**
- **flooding,**
- **public health,**
- **water quality,**
- **energy,**
- **transportation, and**
- **water supply.**

Audit Scope

- **Identify potential SDOT operations, services, or structures that could be significantly impacted by anticipated changes in the Pacific Northwest region's climate;**
  - **Focus on primary impacts of climate change;**
  - **Review did not consider potential secondary impacts.**

We identified five concern areas that climate change could significantly impact the Seattle Department of Transportation:

- **Flooding and Landslides**
- **Roadway Conditions**
- **Bridge Conditions**
- **Seawall Conditions**
- **Trees and vegetation (Urban Forestry) in the public ROW (rights-of way)**

Transportation Concern Area: Flooding and Landslides

Potential for Increased or More Extreme Flood and Landslide Incidents

Transportation Concern Area: Flooding and Landslides

Increased Need for Emergency Response to Landslide and Flooding Incidents

Transportation Concern Area: Flooding and Landslides

Threaten the Stability of Roads, Bridges, Retaining Walls, Stairways

Transportation Concern Area: Flooding and Landslides

Adequacy of current drainage system capacity and design standards

Transportation Concern Area: Flooding and Landslides

Impacts to water quality

Transportation Concern Area: Roadway Conditions

Climate change impacts could potentially cause the City's pavement to deteriorate at a faster rate, which could result in an increased need for maintenance and repair response.

Transportation Concern Area: Roadway Conditions

Drainage Problems and Street Flooding Will Increase

Transportation Concern Area: Bridge Conditions

Older Bridges Face Erosion and Paving Problems Due to Increased Precipitation

Transportation Concern Area: Bridge Conditions

Rising Sea Levels Will

Reduce Bridge Clearances

Transportation Concern Area: Bridge Conditions

Warmer Temperatures and Thermal Expansion Will Increase Maintenance Requirements

Transportation Concern Area: Seawall Conditions

Additional Seawalls May Be Needed to Protect Shorelines from Coastal Inundation

Transportation Concern Area: Seawall Conditions

Alaskan Way Seawall Replacement Design Standards Need Further Analysis

Transportation Concern Area: Seawall Conditions

Alaskan Way Seawall Replacement
Design Standards Need Further Analysis

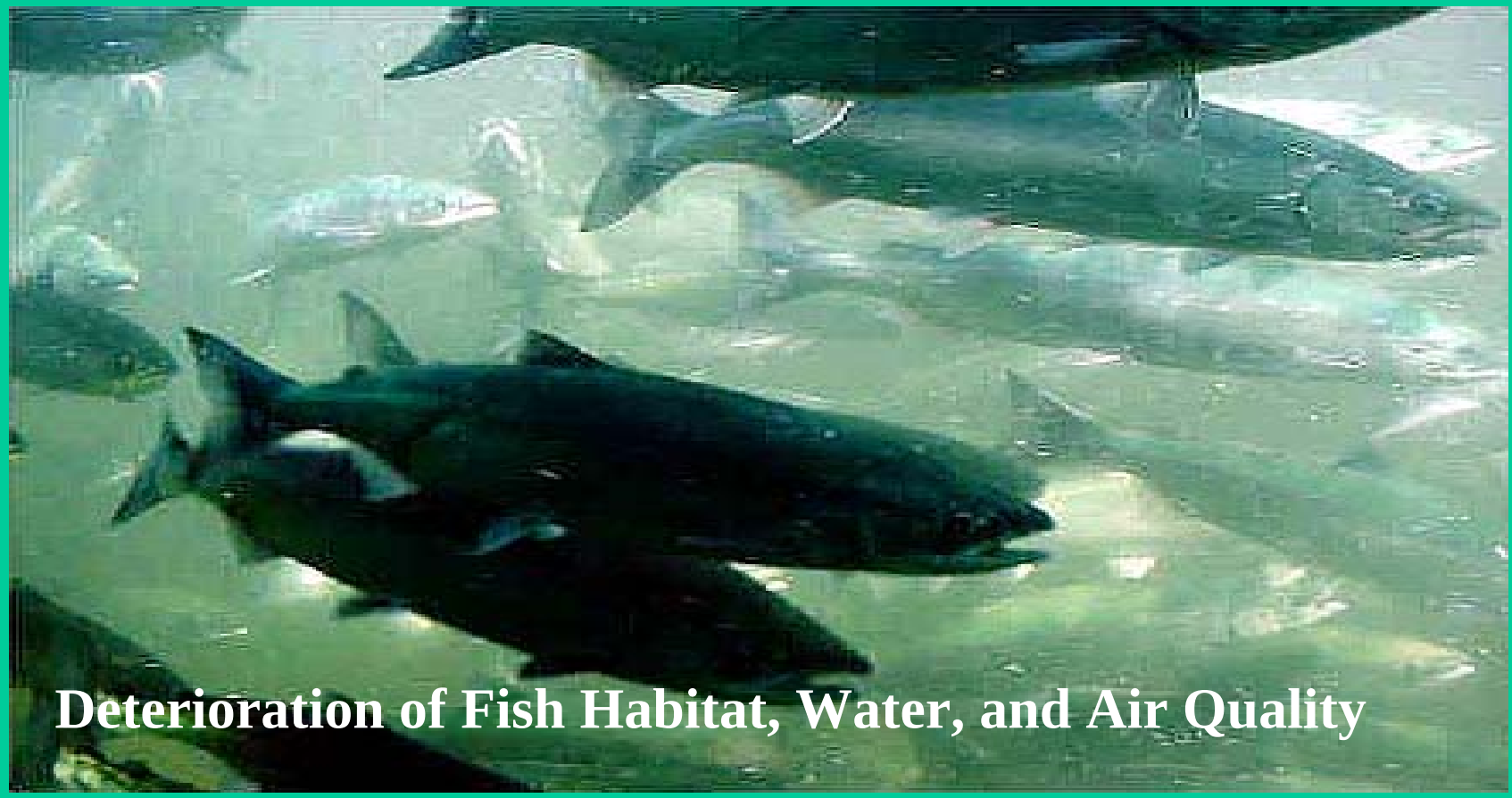
Transportation Concern Area: Seawall Conditions

Alaskan Way Seawall Replacement Design Standards Need Further Analysis

Transportation Concern Area: Urban Forestry

Increased Adverse Impacts to Trees and Landscaped Areas

Transportation Concern Area: Urban Forestry



Deterioration of Fish Habitat, Water, and Air Quality

Audit Recommendations

The Seattle Department of Transportation should consider:

- **conducting further analysis to determine whether the standards for the seawall replacement design sufficiently address the projected rise in sea level, and**
- **determine how climate change will be included in long-term planning related to flooding and landslides; seawall, bridge, and roadway conditions; and urban forestry**

Audit Recommendations

The Executive should establish an interdepartmental team on climate change to:

- **Ensure the consistent use of scientific projections and data in developing City standards, policies, and long-range plans;**

Audit Recommendations

The Executive should establish an interdepartmental team on climate change to conduct a study to:

- **Identify, prioritize, and quantify the potential effects of climate change impacts; and**
- **Plan appropriate responses to changes in the region's climate.**

Global warming will significantly impact the services City of Seattle provides.

If I could get everyone to read one thing:

The New Yorker issues April 25, 2005;
May 2, 2005; and May 9, 2005: a 3 part series
"The Climate of Man"

http://www.newyorker.com/printables/fact/050425fa_fact3

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